STATE OF CALIFORNIA

SENATE SELECT COMMITTEE TO INVESTIGATE

PRICE MANIPULATION OF THE WHOLESALE ENERGY MARKET

HEARING RE: UPDATE ON VARIOUS INVESTIGATIONS INTO CALIFORNIA'S ELECTRICITY CRISIS

STATE CAPITOL

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Reported by:

Evelyn J. Mizak
Shorthand Reporter

APPEARANCES

MEMBERS PRESENT

SENATOR JOSEPH DUNN, Chair

SENATOR WILLIAM MORROW, Vice Chair

SENATOR BETTY KARNETTE

MEMBERS ABSENT

SENATOR DEBRA BOWEN

SENATOR WES CHESBRO

SENATOR MARTHA ESCUTIA

SENATOR MAURICE JOHANNESSEN

SENATOR SHEILA KUEHL

SENATOR BYRON SHER

STAFF PRESENT

IRMA MORALES, Committee Assistant

LARRY DRIVON, Special Counsel to Committee

ROBERT PRATT, Legislative Counsel

WADE TEASDALE, Chief of Staff, SENATOR MORROW

CHRIS SCHREIBER, Consultant

ALEXANDRA MONTGOMERY, Consultant

ALSO PRESENT

LORETTA M. LYNCH, President
California Public Utilities Commission

GARY M. COHEN, General Counsel
California Public Utilities Commission

LAURENCE CHASET, Attorney
California Public Utilities Commission

MARK ZIERING, Program Manager
Consumer Services and Protection Division
California Public Utilities Commission

ROBERT McCULLOUGH, Managing Partner
McCullough Research

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P-R-O-C-E-E-D-I-N-G-S

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CHAIRMAN DUNN: Why don't we get going.

Good afternoon, everybody. I won't say that it's nice to be back in Sacramento because I suspect everybody in the audience will disagree that, since we're back, whether it's good news or bad news. I guess we'll leave that to each and everybody, but it's nice to see everybody.

We're here today to take testimony from two individuals, both who are well known to the Committee and elsewhere, of course. That is the President of the California Public Utilities Commission, Loretta Lynch, and also Robert McCullough. Both of their testimonies will be related to a similar issue relating to the times that there were blackouts and service interruptions in California during our energy crisis, and whether in fact the blackouts and service interruptions were in fact necessary or warranted given the circumstances upon a review of much of the evidence.

I want to also apologize to everyone for a rather quickly arranged hearing for today. Part of the motivation to expedite the hearing was, of course, for the Committee to hear the testimony, and because it may have some relevance to the standard market design discussions that are ongoing at the federal level. I'll leave it to the end to determine whether there's any relevance to it, but since that is a pressing and immediate issue at the federal level, if the evidence today that comes forward is relevant to that, at least in my humble view, I felt it was important that it be aired.

I also want to make sure that everybody understands that again, as usual, the Committee is not here for purposes of drawing specific conclusions. There is more to be heard on these issues. But it is something, a step, I believe, we need to take at this particular time.

Before I say anything further and get our first witness up here, Senator Morrow, any comments you'd like to share? We'll give the same invitation to Senator Karnette, who will be with us as well.

We do not have a quorum today, but we will not be voting on any issues today, so we will proceed without that quorum.

Let us begin by inviting Loretta Lynch forward and sharing with the Committee her testimony. I know that with the President of the PUC are several other representatives from the PUC. Loretta, if you wouldn't mind, introduce each of those as you settle in.

If the other two want to come forward to the table up here, we can do that.

MS. LYNCH: Thank you, Senator Dunn, Senator Morrow.

I have with me to my left Gary Cohen, who is the General Counsel of the PUC; Laurence Chaset, PUC Counsel; and Mark Ziering, who is a Program Manager in our Consumer Services and Protection Division. He has been the Project Manager of our investigation of the wholesale electric generators who have capacity plants in California. And Larry and Mark are the primary authors of this PUC staff report. Of course, many, many people worked on this report.

I believe that you all have copies of the full report as well as the presentation slides. I actually don't have them on the computer.

I wanted to give you an update of where the PUC

is regarding our investigation of the wholesale generators. What the PUC experts, both our lawyers and our energy experts, have been analyzing over the past year is extensive data on power production, power plant outages, the bidding behavior of electricity generators, and also various transmission availability so that we could see not only whether power was produced, but also where the power could flow as needed.

We focused specifically on the 38 days where there were blackouts or Stage II emergencies which caused service interruptions of interruptible business customers. Those days fall between November 2000 and May 2001.

And we focused on five generators who were not utilities in California but who do own power plants which were divested from the utilities. Meaning, these are the generators who bought the old utility power plants. So, we have lots of data historically about how those power plants were operated and run. And then also what we specifically looked at in this study was how those power plants were operated and run, or not run as the case may be, during the 38 days where there were blackouts or Stage II emergencies which caused power to be dropped to some customers.

Those five electricity generators are Duke, Dynegy, Mirant, Reliant, and AES Williams. On Page Two of the

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presentation are the days that we focused on. So, these are all the days that there were Stage IIs which resulted also in power being cut to interruptible customers or blackout days where power was cut to residential as well as firm load customers.

CHAIRMAN DUNN: Loretta, if I can interrupt.

Does everybody in the audience have a copy of what we're looking at at this point in time? Anybody that does not that needs it? I think we may have one in the back. There we go. I think there's a couple more in the back.

Charlie, we have deliberately excluded the ISO from receiving copies of this. Do we have a few other copies that we can get back to the ISO representatives. We're getting it back there. I just wanted to make sure everybody in the audience, since this is not on the computer screen, can follow through with Ms. Lynch's testimony.

Okay, my apologies.

MS. LYNCH: On Page Three, there's an overview summary chart which shows day by day for the 38 days that we focused on that generators had capacity available that they could have produced to make electricity during the blackout and service interruption hours that occurred in California from November 2000 to May 2001.

And the color chart on Page Three shows the relative amount of megawatts of each generator. The generators are color coded for each day. As you'll see on Page Three, for instance, on one of the days where there were blackouts or Stage II emergencies, there were over 1700 megawatts of power that was available but was not produced to avoid either the blackout or

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the service interruption.

In fact, if the five electric generators that we studied had operated all of their available capacity from November 2000 through May 2001, all blackout days in Southern California would have been avoided, 65 percent of the blackout hours in Northern California would have been avoided, 81 percent of service interruptions for interruptible business customers in Southern California need not have happened, and 51 percent of service interruption hours for business customers in Northern California who were on the interruptible program need not have happened. In fact, on all but two of 32 statewide blackout and

service interruption days, the days where it happened throughout the state rather than just in Northern or Southern California, the five generators we studied did not produce over 500 megawatts of power that they could have produced.

I'd like to talk for a moment about how conservative our estimates are. First, for purposes of this study, we do not count any plant that was reported out to the ISO. We take as valid all plant outages.

Second, we count all out-of-market bids. So, this isn't a situation where they didn't bid into the ISO, but they bid in some other market. We took those into account.

Third, we take into account all the reserves that we're required to have on hand. Those are counted.

Fourth, we take into account all ancillary services commitments, and so in every respect, we have been conservative in our estimate of what power was available. So, we do not count as available any of the power in those four

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categories. We count that power as unavailable.

And, of course, we did not question the validity of the outages as reported.

If you note on Page Five, the chart graphically shows --

CHAIRMAN DUNN: If I can interrupt.

On Page Four, I want to clarify your second bullet point. It says,

"On all but two of the 32 statewide blackout and service interruption days, the five generators did not produce an average of well over 500 megawatts of power that they could have generated."

This is referring to 500 megawatts on each of those days.

MR. ZIERING: It's an average over the blackout and service interruption hours.

CHAIRMAN DUNN: Identify yourself.

MR. ZIERING: I'm Mark Ziering from the PUC staff.

That means that over the outage and blackout -- the blackout and service interruption hours those days, the hours where there were blackouts or service interruptions, there's an average of 500 megawatts available but not generated.

MR. DRIVON: Per day.

MR. ZIERING: Blackout and service interruption hours.

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MR. COHEN: Gary Cohen.

On each day that there were blackout and service interruption hours.

CHAIRMAN DUNN: Senator Morrow.

SENATOR MORROW: Mr. Chairman, I apologize. I don't mean to interrupt the flow of your testimony, Commissioner Lynch. On that point I have read at least the Executive Summary of the report, so this is a question I want to get up front.

When you say that in your meaning of available capacity, if you don't count the outages, then is that saying to me, I want to clarify, that for instance, if you have a 500 megawatt plant that is down for two days, you're not including 1,000 megawatts as far as available capacity; is that correct?

MS. LYNCH: That's correct. If the generator reported that their plant was down, we assume, we take that as valid, and we don't count that as available. This is in

addition to reported outages, there was power available that was not generated.
SENATOR MORROW: So, that's in addition to that. This report also doesn't cover, then -- again, I apologize; I just haven't read the whole thing yet -- but it doesn't cover the issue at all of whether or not there was, for lack of better words, a fraudulently physical withholding of intentional plant and power downs and the like?
MS. LYNCH: Correct. We do note how much capacity generators have reported out as well as how much they did not generate in a moment, but we assume to be valid for
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purposes of this study all reported plant outages.
SENATOR MORROW: That clarifies. Thank you.
MS. LYNCH: On Page Five, there's a graphic representation of what was happening in Southern California. Every line that is blue represents power that was available that was not generated on a blackout or service interruption day in Southern California.
All the purple or red lines represent how much we were short. So, in every day in Southern California, the shortage could have been covered by power that was available but not generated in Southern California.
And then on Page Six, the representation shows the same for Northern California. On the days where the red line is higher than the blue line, those were days that in Northern California not enough power was produced to be able to stave off the outage under these conservative assumptions. Every day where the blue line is higher than the red line, if they would have produced the power that was available and bid it into the market, they could have used that power to avoid the blackouts or service interruptions that occurred in Northern California.
And then the final slides show in particular some examples that are culled from the analysis and the report.
Excuse me. On Page Seven, what we do is answer Senator Morrow's question on a percentage basis. We added the reported outages to the power that we found not to be available. So, assuming the outages were valid, we added that to additionally the power that we determined through our
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analysis could have been produced but wasn't, and added those up to make a percentage of the entirety of the capacity.
So you'll see on average during statewide blackout and service interruption days, 37 percent of Dynegy's capacity was either down or not made available to the market; 38 percent of Duke's capacity, the same; 42 percent of Reliant's capacity; 42 percent of Mirant's capacity; and 46 percent of Williams and AES's capacity was either down, out of service, or could have produced and didn't produce during blackout and service interruption days.
Of course, these are historically high numbers for these plants, which up until 1998, were owned by the utilities. And then in particular, we have pulled, for example, some of how those numbers impact.
So for instance, on December 7, 2000, Williams AES declared 76 percent of its capacity out of service, but they also had 36 megawatts which they could have produced to bid into the system, which they didn't.
CHAIRMAN DUNN: You mean 3,006.
MS. LYNCH: Correct. They had 3,006 megawatts which they did not bid into the system, 76 percent of its total capacity in California.
Now for that, the large percentage of megawatts,

2,970 were declared down, and 36 megawatts actually still existed for them to produce, but they didn't.

But when you go to the next page, on Page Nine, in the Dynegy example you'll see even higher amounts of megawatts that could have been produced that weren't. So, for

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instance, on March 31st, 2001, Dynegy declared out of service or did not produce 55 percent of its total capacity; 875 megawatts were reported out of service or the plant was down, but 522 megawatts were available but not bid or produced into the market. And of course, if those megawatts had been produced, the blackout that occurred in that hour could have been covered. In fact, the blackout need not have occurred if those megawatts were produced.

Similarly on Page Ten, we've just taken a random example, January 11, 2001. Duke had declared out of service or did not use 63 percent of its total capacity in California. At that point, 833 megawatts -- we were 833 megawatts short. So, 833 megawatts where the customers were blacked out. Duke had 1,861 megawatts in plant outages, but 262 megawatts which they could have bid in to alleviate the blackout and produced, which they did not.

I do want to note what this report does not do. In finding conservatively that all of the blackout hours in Southern California could have been avoided, and 65 percent of the blackout hours in Northern California could have been avoided, what we find is, there is no reason for those megawatts not to have been produced or bid in.

What we are not finding is that, conversely, the 35 percent of blackouts in Northern California were valid. We are not finding that. What we're saying is, for purposes of this report, there was power available that was not bid in.

What we have not finished is our examination of the validity of the plant outages and other bidding behavior.

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So, it is open to question whether the 35 percent of blackouts in Northern California could also have been avoided. But this report concludes that 65 percent of them affirmatively should have been avoided.

Moreover, just a note about the report. There are certain examples that we use in Chapter Four to explain specific bidding behavior, or specific behavior of generators that is problematic, to say the least. We do not name those generators and those specific plants and those specific hours, and I'd just like to tell you why.

As we were fighting with the generators over documents over the last year, at one point the PUC chose to enter into a confidentiality agreement with the generators so that we could get some data. The terms of that confidentiality agreement mean that we cannot identify generators by plant-specific ways. So, we cannot tell you for a particular plant, what was happening at that plant. And since the data points and analysis in Chapter Four involve particular plants of particular generators at particular hours, we are precluded by our confidentiality agreement from identifying those generators in particular.

However, the report does identify generators name by name, day by day. It's just not plant-specific.

CHAIRMAN DUNN: Okay.

Questions? Senator Morrow, Senator Karnette?

SENATOR MORROW: Thank you, Mr. Chairman.

Commissioner Lynch, back last spring, I guess it was, this Select Committee held a very extensive hearing dealing

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with the Duke energy plant down in the South Bay Area. And the focus of that committee hearing, I think, was on January 18th and those days during the blackouts, or at least the various stage alerts that were declared.

It became very clear in the course of that investigation, at least the evidence, the testimony that was presented to this Committee, and the records seem to indicate, that various power plants and units within the overall power plant had been ramped down and certainly was not running to its entire available capacity. And at that time, at least, there was a big question mark as to why, because it came at a time period in which there was an energy alert, emergency alert.

Subsequent to that, and to some extent, I confess, to our embarrassment, Duke came forward with information that seemed to indicate, at least passed my muster, that much if not all of the powering down was at the direction of the ISO. There may be a whole host of reasons for that, of course, and we've dealt with that with transmission and things like that.

I guess what I'm driving at and where I'm going with this is, how much in this report, when you indicate that so much power in these plants were out of service, how much of that can be attributed to a power plant being out of service at the direction of the ISO, or not going to its full capacity by reason of directions from the ISO or other agencies?

MS. LYNCH: I'd like to kind of give an overview of two points and then turn it over to our technical experts to tell you more.

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One is, we can't discuss specific plants. We can discuss specific dates. So, if you turn to Page 23, you'll see what Duke had available day by day in all the blackout and service interruption hours. But we can't, because of the confidentiality agreement, give you with granularity which plant had that available from Duke. But as to --

SENATOR MORROW: A confidentiality agreement with Duke or the ISO?

MS. LYNCH: With Duke for their data. So, their data requests that we are not plant -- or not requests, but their data, because we obtained data from them, we entered a confidentiality agreement that said we will not release publicly plant-specific information unless they did.

SENATOR MORROW: Does your report or the analysis from your staff, does it contain or does it address that issue, or consider that issue that I'm talking about at all?

MS. LYNCH: Well, as to reported outages, we assume those are valid and take those out of the calculation.

As to the conversations or the communications with the ISO and the company, I would turn it over to Mr. Ziering.

SENATOR MORROW: On the outages, as I recall from the testimony way back in the spring, and I'm going with the benefit of my imperfect recall, but it wasn't necessarily because the plant broke down, or a piston, or a drive, or something broke. It was, at least as it turned out, the ISO giving directions to ramp down.

I just need to know if that was considered in

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this report.

MR. ZIERING: That was certainly considered.

I think the real issue here is that the ISO could go outside of markets and order plants be brought on line or not.

This is a generalized data study and we didn't

look at each and every order they put out.
But absent those orders, the only way the ISO can dispatch power is if it's bid into the market, or if they conclude an out-of-market deal with the ISO.
We've shown that there was a lot of power from plants that were in service, reported as being in service, that was not bid into the markets or otherwise made available to the ISO.
So, you can certainly question whether the ISO should have taken some steps to increase the number of bids through use of various orders. But basically, if the power producer didn't bid the power in or make it available otherwise, the ISO couldn't dispatch it.
And I should mention, one of the reasons for that may be that the power plant either didn't bid the power in, which we do trace in this report, or they bid the power in at a very, very high price.
MR. COHEN: But I think that the general point is that we took into account in coming up with the number of megawatts that were available from any particular generator --
CHAIRMAN DUNN: Gary, hold on for just a second. Can everyone hear Gary in the back? Is his mike

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on? Okay, we'll get that corrected.
Gary, just pull the other one over temporarily.
MR. COHEN: Senator, we took into account in calculating the number of megawatts that any particular generator had available during the hours that we were looking at not only what they had reported as being out of service, but also any orders that they received from the ISO. So, if the ISO ordered them to be in reserve, we took that into account. So that wasn't -- that would be included as not available if the ISO had ordered them to be in reserve, for example.
What we don't know is, and what Mr. Ziering was saying is, normally for the ISO to know that a plant was available to be asked to generate, there'd have to be a bid from that plant saying, "Here we are. You know, we've got 500 megawatts. We're prepared to sell it at X dollars."
If there's no bid, then the ISO, in order to dispatch that plant, would have to basically, you know, get on the phone and say, "Are you available? Can you generate?"
We don't know to what extent that happened. That's sort of the next step in terms of what the ISO's response was to this situation.
SENATOR MORROW: I guess my concerns weren't so much with the issue of economic withholding, and withholding or playing with the bids, so much as the actual issue of whether or not there was a physical withholding, and if there was an actual physical power down, and not pumping out the energy as they could have, if there's a reason for that.
Am I hearing, then, you did consider that, all

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orders that were issued to the various power plants by the ISO?
MR. COHEN: Yes.
SENATOR MORROW: It's been a long time since I chopped wood on this issue, but when I go back to January 18th, and I get with the Duke people again, and we go through all those figures, and when I'm shown that the ISO did give those instructions, it seems very clear that would be information that was privy to the PUC staff and considered in this report?
MR. COHEN: I believe so, yes.
CHAIRMAN DUNN: Can I interrupt for just one second before you move on to other questions? I know Senator Karnette has some, but I think Senator Morrow has some further

questions as well.
This is probably one issue that Senator Morrow and I do not agree on with respect to that Duke facility in San Diego. I just want to clarify, at least from my perspective, on the record here why there's incompleteness related to that.
Those ISO orders that Duke holds out as dictating their behavior at those plants are based on the schedules submitted by Duke, which, to this day, they have refused to turn over to this Committee. Despite numerous demands, requests, threats for contempt, they have as of yet not given us those schedules which would provide the bases for which the ISO issued those ramping up or ramping down orders for those critical times.
And so, as of yet, no definitive conclusion, in my humble opinion, can be drawn whether implicating Duke in manipulative behavior or exculpating Duke in manipulative

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behavior with respect to what those witnesses had testified to.
Just one additional note that, while not related to those three days, Duke was cited, I believe by the ISO, for virtually identical behavior at some of its plants here in California.
Senator Morrow.
SENATOR MORROW: Don't get me wrong. I'm not prepared to exonerate anybody here necessarily.
I would also note that those schedules, however, are in the possession and crucial knowledge of the ISO as well, too.
CHAIRMAN DUNN: The schedules filed by Duke are at the ISO?
SENATOR MORROW: I believe that to be the case.
CHAIRMAN DUNN: I'm sure they would be at the ISO.
SENATOR MORROW: And that's included in a lot of the information that they've yet to give us as well.
CHAIRMAN DUNN: That may be correct. Believe me, Senator Morrow, you know me. I'm no great fan of the ISO in many instances, as you're aware.
I just want to make sure the record is clear on Duke's behavior, since we're coming around to the ISO in a few minutes with respect on to mid-January of '01 in San Diego.
Senator Morrow, would you yield to Senator Karnette? I believe she had one question.
SENATOR MORROW: Yes.
SENATOR KARNETTE: I want to be a little clearer,

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Loretta, on what you were explaining.
When the ISO ordered, they need power, so they call Duke. But how would they call? That's their last resort? I mean, if you don't have it, you have to call?
It seems like they shouldn't have to do that. In other words, I put myself in the situation. I need some energy, so I call up and say, "Have you got any," and if they say no, how do you know they're telling the truth? That's really what I'm asking.
MR. COHEN: Well, Senator, I think first of all, you've put your finger on a serious problem, which was, the way the system worked, at least until we had the must-offer rule come into effect, the generators could decide whether to bid or whether to not bid. And if they didn't bid, or if they bid, you know, some very low amount, the ISO had no way of dispatching them other than to literally get on the phone, and call them up, and beg for power, and try to get an out-of-market sale.
SENATOR KARNETTE: And if they didn't get that,

how do we ever know that anybody was telling the truth? I think I going, really, to your point.
I mean, as Legislators, and as people of the state expect us to know, I don't know exactly. I'm hoping this Committee can determine exactly what I'm supposed to do as a Legislator to not have this happen.
People have to tell the truth or suffer the consequences.
MR. COHEN: Well, I think one thing you have done in passing Senate Bill 39XX is, you've now given the Commission
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the authority, together with the ISO, the ability to come up with maintenance standards and operation standards for the plants. And then you've given the PUC the ability to go in and inspect the plants and make sure that they are operating the way they should be, and that they are telling us the truth when they're saying they've got some kind of mechanical problem. That's an ability that we did not have last year while all this was happening.
CHAIRMAN DUNN: Senator Morrow, did you have further questions?
SENATOR MORROW: No.
CHAIRMAN DUNN: A couple quick ones for you, Commissioner Lynch, following up really to Senator Karnette's comments.
I believe it was December 19th of 2000 that the Energy Secretary gave the ISO the emergency powers to basically order up, to use layman terms, power where they believed it was necessary.
From the analysis that the PUC has done thus far, can you reach a conclusion as to whether in fact ISO should have been aware of this information that you have presented to us today and should have acted upon that? Is there any view of the PUC with respect to that issue?
MR. COHEN: Senator, I think that our report certainly raises a serious question as to whether the ISO had the information that it should have had and did everything it could to make sure that blackouts and service interruptions didn't happen.
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I don't think the report answers the question. I don't think that we have -- we haven't had the ability to study, and don't comment on the report, on whether the ISO had the information in real time that we were able to reconstruct over the months of doing this investigation, number one.
And number two, we don't have the information as to what efforts the ISO in fact made to get power to be generated when they were looking at the necessity of interrupting load.
So, we think that's a fruitful area of inquiry certainly, but it's not one that we have really definitively nailed down at this point.
CHAIRMAN DUNN: Mr. Cohen, based upon your understanding, certainly all the information that's contained in the report is information that was available to the ISO. The question may be whether it was real time available or not.
MR. COHEN: In fact, almost all of the information in the report is based on -- came from the ISO. The only significant type of information that we relied on that doesn't come from the ISO, it comes from the plants, were the operator logs of the plants themselves, which we looked at to see if we could ascertain why a particular plant might have been out of service, or why a particular plant might not have been generating.

But in terms of the raw -- the basic raw data that shows, you know, what's the capacity of the plant, what's it actually generating, what has been reported as out of service, and et cetera, all of that comes from the ISO; yes, sir.

CHAIRMAN DUNN: You mentioned, Mr. Cohen, that it may be an area for further inquiry regarding what the ISO actually did, if we assume that it was aware of this information at that time.

Is the PUC doing such an inquiry at this time?

MR. COHEN: Well, we would like to. One of the problems is, it's extraordinarily complex and time consuming. I mean, there are taped conversations between ISO staff and people at the scheduling coordinators in the plants. But there literally are thousands, and thousands, and thousands of hours of those tapes. So, it's a pretty daunting task.

But it's certainly something that we are -- we've been looking at and are trying to come up with ways that we might crack that nut, yes.

CHAIRMAN DUNN: Understood.

Commissioner.

MS. LYNCH: Moreover, we're still working with the ISO and their lawyers about the cost of copying those tapes, which are substantial, and how much we have to pay them to get a copy of the tapes.

CHAIRMAN DUNN: We've had similar struggles with a variety of entities. Actually, I don't think the ISO on that one, but other entities.

A few more questions, and I know Mr. Drivon also has some as well.

I know the report doesn't draw any conclusions, but is there any speculation among those at the PUC who have worked on this report as to why the five generators were leaving so much power off the table? By that I mean, only that power that you examined as opposed to where plants were claimed to be shut down for maintenance or other reasons.

For that available power that just wasn't generated as determined in your report, any speculation as to why it was left off the table?

MR. COHEN: You know, Senator, the only reason that is imaginable as to why generators would not generate, particularly during times when they knew that the system was in an emergency, and where it was going to be imminently needed to shed not only interruptible load but firm load of citizens, and businesses, and people, is because they thought that by withholding capacity from the market, they would drive the price up.

And one of the things that we conducted this investigation and issued this report to prove was that it wasn't a question of California not having enough available generating capacity in order to meet the needs of the system and of the citizens and businesses of the state. That's the story that we heard over and over and over again from the generators when all this was happening: Well, you people just haven't built enough power plants; you've got a lot of demand; it's been a dry year, et cetera, et cetera.

This report shows that those excuses were simply untrue. There was enough capacity to avoid almost all of the blackouts except that the companies that were in control of the plants simply chose, for whatever reason they had of their own, not to generate it.

CHAIRMAN DUNN: If we accept, and I know it's speculation, if we accept the speculation that the available generation that simply was not made available was done for purposes of driving up the price, these blackouts and service interruptions were at times, if I am correct, Mr. Cohen, in which prices were already extraordinarily high; true?

MR. COHEN: That is correct.

CHAIRMAN DUNN: I want to go to Page Six, if we could, of the report. I just have a few follow-up questions, then I'll open it up to Mr. Drivon.

This is the graph showing the 65 percent of Northern California blackouts.

I'm sorry, not of the report; of the statement. Page Six of your testimony today, Commissioner Lynch.

For the 35 percent that you've identified, as opposed to the 65 percent that are pretty much seen in January of '01, any theories as to why those graphs at that time period looked different than the others when demand really didn't change that much between January and March?

MS. LYNCH: These graphs incorporate conservative assumptions about availability of transmission over Path 15, the main transmission line between Northern California and Southern California.

So, our analysis assumed a 200 megawatt reserve that essentially was kind of a safety reserve, that you take out, you subtract from Path 15's rated ability to transmit the power across the line. So assuming that, what we know is that

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we assume -- we also received Path 15 transmission data from the ISO. We assumed that data to be valid.

As we know now from the Enron memos, there were a lot of generators or traders trying to create phantom congestion on Path 15. But we assumed that to be valid for purposes of this study.

So, essentially in November and through December and January, Path 15 was either full or pretty full, such that even though there was power in the south, it couldn't get to the north under these conservative assumptions with the reserve margin and taking the Path 15 transmission data to be valid.

Then when it comes to March, Path 15 opens up. And there are many theories about why Path 15 could have opened up. It could be that more generation was coming in from imports from the northwest, for instance. But this study does not take into account the availability of imports to also solve this.

CHAIRMAN DUNN: Is it fair -- and I know that Larry and Gary want to add to that -- is it fair from your comments just made, Commissioner Lynch, that if it is shown that in that December-January time period that the perception of congestion at that time was incorrect, and in fact there wasn't the congestion as has been reported, that this 35 percent may ultimately change. Is that a fair statement?

MS. LYNCH: We haven't reached that conclusion, but I certainly think that that needs to be explored further.

MR. CHASET: I'm Larry Chaset.

I would point to Figure 7.3 at Page 47 in the report itself.

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CHAIRMAN DUNN: Let us get there, Page 47.

MR. CHASET: Page 47, yeah. It's two graphs on the page. It's the bottom one, 7.3.

You'll note on the left-hand side, 7.3 is for Mirant. Mirant is the one generator all of whose plants are in Northern California. You'll note that in the dates that are in January, kind of about the second quarter of the graph from the

left, all of those dates show more than 1500 megawatts of power outages. That's about half of the total capacity of Mirant's generating units in Northern California, and that's a very high percentage of plants out of service.

So, what President Lynch said about Path 15 is certainly true. It's also true that a very high percentage of Mirant's plants were not available to generate in that critical period when there were blackouts in Northern California. And I think that that certainly contributed to the reason why there was some power shortages in the northern part of the state.

CHAIRMAN DUNN: But under the assumption that was made for purposes of this report, you simply --

MR. CHASET: We are assuming those to be valid. And as Gary said, the continuing investigation will be looking at those assumptions.

CHAIRMAN DUNN: All right.

MR. CHASET: There's one other thought that we've mentioned in the report that's also a factor, and it's another conservative assumption.

We know that Path 15 was pretty constrained in that period of time in January. But there was another route for

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available Southern California power to reach Northern California. If you look at that table on Page 5 of the Summary, the previous Southern California table, you'll see that on those blackout days in Northern California, there were, you know, six, seven, eight hundred or more megawatts in Southern California, available power that wasn't generated. And it's possible that that power could have been routed to Northern California, the back route as it were, up to the northwest on the direct current line, and then down from the northwest on the intertie.

We have not looked at that. We have not even considered that. So, we could not even provide that as a possible means of mitigating the blackouts in Northern California because we just haven't looked at it yet. Something that should be looked at.

CHAIRMAN DUNN: All right. One other question, then I'll turn it over to Mr. Drivon, and I'll have a few more after that.

I'll pose it to you, President Lynch, but I'll welcome an answer from any of the individuals.

From your review of the data, is there a relationship between the generators in terms of the level that each of them withheld, for example, as a percentage of the total withheld or not made available during the times that you studied?

MS. LYNCH: Well overall, it's remarkably similar when you look at it on a percentage basis and include both plants that were down and power that wasn't generated.

CHAIRMAN DUNN: Can you explain in a little more

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detail?

MS. LYNCH: One of the slides we used was a percentage over time.

CHAIRMAN DUNN: Which page?

MS. LYNCH: It's Page 7.

MR. COHEN: So, if you include both plants that were out of service for maintenance, or outage, or other reasons, and plants that were available to generate but didn't generate, the percentages on Page 7 show that for each of the generators, it's a very similar percentage. There's a pretty narrow range there of 37 percent to 46 percent.

Now, I think we did find differences among the generators in terms of which generators failed to generate

available capacity. For example, Mirant tended to be out of service more, and therefore had less available and then, you know, failed to generate less.

But overall, if you look at, you know, of everything that they had in their portfolio, what was made available to the state, the percentages are quite similar.

CHAIRMAN DUNN: Mr. Drivon.

MR. DRIVON: Thank you. Just a couple of questions.

Mr. Cohen, I think you called attention to the fact that at some point there was an order involving a must-offer; correct?

MR. COHEN: Yes, in June of last year.

MR. DRIVON: Was that at that time coupled with a requirement that once offered, it must be actually delivered?

MR. COHEN: Yes.

MR. DRIVON: All right.

MR. COHEN: At a price, and then there was a price cap that set the price as well.

MR. DRIVON: Another of my questions has to do with whether or not this analysis considered the potential for circulation on the DC line with respect to congestion on Path 15?

MR. ZIERING: President Lynch actually addressed that. As we said, we looked only at Path 15. We did not look at circulating power up the DC line and back down the AC line.

That might mean that additional blackouts could have been avoided.

MR. DRIVON: And the final question on that point is whether or not any part of either the analysis that you've done or the analysis that you want to do on the Path 15 congestion issue, including the DC circ. question, would include the use of the DC line for ricochet transactions, which have been a part of the investigation that we've done and some hearings we've had?

MR. ZIERING: Certainly we'd like to look at that; yes, sir.

CHAIRMAN DUNN: President Lynch.

MS. LYNCH: I would like to point out in further answer to Senator Morrow's question, the report contains both not generated and not bid. And that data is somewhat different.

If you look at the charts in the three point series, for instance for Duke it would be on Page 23, Chart 3.1, that's not generated.

But if you look at Page 32, the Figure 4.1, that's not bid.

So, your question goes to essentially is it ISO's fault or is it the generators' fault? We don't answer that question because we don't know. We did not review the thousands of hours of conversations between the ISO and the generators.

But we would note that it's harder to instruct, for the ISO to instruct not to use if, in fact, the bid hasn't actually happened. So, that's why we cull out and separate the data between not bid and also not generated, to try to get at exactly the question you're asking.

SENATOR MORROW: Thank you.

CHAIRMAN DUNN: President Lynch, I want to drive this point home, if I understand your testimony.

If we accept the conclusion stated in the report as correct, we found ourselves in a situation in which there was significant capacity available but not made available to

California for reasons that we don't know at this point in time, we can only speculate, but it was not made available to California, thus resulting blackouts, service interruptions, whether to law enforcement, businesses, schools, hospitals, the average consumer on the street.

Is that a fair statement?

MS. LYNCH: Yes.

CHAIRMAN DUNN: Any other questions from the Committee?

Seeing none, I believe, Commissioner Lynch, you have another obligation that you have to go to. My hope is some of the other PUC representatives can stay, because I suspect we will have some follow-up questions as well.

MS. LYNCH: Certainly.

CHAIRMAN DUNN: Thank you, President Lynch.

Mr. McCullough, if you would come forward and settle in. We'll get going in about a minute.

Actually what I think we'll do, why don't we take three minutes. Folks can use the restroom, et cetera. We know we've got a few folks outside for obvious reasons. So, we'll take about three to five minutes to let folks stretch their legs and come back in.

[Thereupon a brief recess was taken.]

CHAIRMAN DUNN: Welcome back, everybody.

As Senator Karnette pointed out, and I'll share for everybody's review, please note I did not make any estimate of how long we'd be here today because every time I do, we're usually here until 10:00 p.m. So, I'm hoping that by not estimating it, we'll be out relatively early this afternoon.

Let's go to our second witness of the afternoon, and that is Robert McCullough.

Mr. Pratt, if you would do your duties.

Mr. McCullough, we need you to be sworn in.

[Thereupon the witness, ROBERT McCULLOUGH, swore to tell the truth, the whole truth, and nothing but the truth.]

CHAIRMAN DUNN: As Mr. McCullough is settling back in, he probably needs no introduction. I think everybody here has heard him testify not only before this Committee on several occasions, but also in a variety of other forums, including in front of the U.S. Senate and other entities in Washington, D.C. and elsewhere.

I do want to make one note for the record before Mr. McCullough gets into his review of data that we have provided to him.

The information that he will be discussing today on documents that he'll be discussing in his presentation are ones in which we have sought and gained a waiver of confidentiality from Enron. So that we ensured that the proverbial T's were crossed and the I's were dotted, allowing Mr. McCullough to review the data and subsequently testify today.

Without any further ado, Mr. McCullough, if I can turn it over to you. If you would please, for the Committee's sake, go through what you did and what you found.

MR. McCULLOUGH: Thank you very much, Mr. Chairman.

Thank you, Senator Dunn, Senator Morrow, and Senator Karnette for the invitation today.

Senator Morrow asked whether I would approach this perhaps less speedily. Considering the sheer weight of work we've done recently, I think exhaustion will make me

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slower. So hopefully, this time you'll have to tell me to perk it up.

We took an assignment from the Committee three months ago to review certain of the dates, critical dates that were of interest then and are of interest now, where the first date where we saw a major crisis occur, that was Silver Peak. We now believe that was a proof of concept, a test, to see exactly how the ISO would respond to a major disturbance.

We also looked carefully at May 22nd, 2000 in the materials made available to us by your staff, Senator Dunn. We now have the full set of Belden e-mails and other materials.

CHAIRMAN DUNN: Let me interrupt you, Mr. McCullough.

For those that may not be familiar with who Mr. Belden is, could you identify him?

MR. McCULLOUGH: Timothy Belden was Vice President of Trading for Enron. He was the single individual most responsible for Enron's role on the west coast in electricity. He was a senior level executive at Enron, and on the same committees and with the same reporting as individuals like Kopper and Fasthow who are currently in trouble with the federal government.

CHAIRMAN DUNN: And Mr. Belden was based in Oregon; correct?

MR. McCULLOUGH: Portland, Oregon.

In going through those materials, we discovered that he had some materials pertaining to May 22nd, 2000, the first date of --

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CHAIRMAN DUNN: I'm going to stop you there because I want to make sure.

Since this is, your screen, is the only place that your slides are going to show, I just wanted to invite anybody from the audience, you may want to shift is to that side.

We could probably tilt it back just a little bit, Robert, if you want, to give more access to folks over here. I can see it just fine, and in fact it can be bent even a little bit more. I can still see it fairly well.

MR. McCULLOUGH: May 22nd was the first day of the California crisis, so we found the availability of Enron materials on that date very interesting.

The third date was the first date of the rolling blackouts, January 17th, 2001. We had discussed that in our previous testimony with the Committee.

The Committee has been very helpful. They asked the California Independent System Operator for detailed operating data pertaining to the events in the winter of 2000-2001. I'll talk about that at some length as well.

The graphic behind me is a famous woodcut. And it's one of a set of woodcuts describing Mount Fuji. I've used it as a theme for two reasons. Not only is it one of the world's most famous paintings, but also it describes the situation we saw in California well.

Apparently the world's most famous painting is for people who follow woodcuts.

My staff told me how to pronounce this famous

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artist's name, and unfortunately, I'm afraid to even try.

This is a picture of three fishing craft facing a

tsunami. And I've attached three dates to it, because they describe an issue that's very central to our appreciation, our evolving appreciation of what went on in California.

The first date, May 25th, 1999, you can see the boat is facing a wave, but it's a wave in the normal sense. It's simply a wave on the sea. The boat is positioned to face that.

The second boat, May 22nd, 2000, is beginning to see a break in the wave.

The third boat, which we can see is foundering, represents January 17th, 2001.

When a wave breaks, it's an example of chaos theory. It is a regular set of rules and regulations that suddenly have gone beyond their area of stability, and the results become chaotic.

In our situation, we are facing a very well lobbied, aggressively supported move to implement standard market design to move this sort of market modeling throughout west coast. And one of the issues we have in front of us is that we are just now beginning to understand the individual crises that we saw in California. We know that once pushed beyond a certain level, these rules become chaotic. It's almost possible to understand what's going on. It's almost impossible to understand the interrelationships of the rules.

And so, in looking through this, we chose this theme simply to talk through how specific market steps can move

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from a relatively normal wave into a breaking wave, and then finally into the maelstrom we see in this painting.

On January 17th, 2001, even after 18 months, we still do not have enough data to understand exactly what was going on on that day. And its impact on the standard market design is as simple as, we simply don't yet know what we need to fix.

I should say in passing, the same experts who told us that we'd have no problems in California, have told us we'll have no problems in this standard market design. I'm completely reassured by their opinion.

I'm going to do an overview. I'll test a small discussion of where did the resources go, and that relates to the relationship between this presentation and that of President Lynch. Then I'll walk through the three dates. And then I'm going to propose some next steps.

The overview is this straight forward. Most parties now have assumed that the Yoder-Hall schemes were localized. This was a way to take a little money around the edges of the ISO each date.

However, what we find going through the Enron documents provided by the Committee is, these were not localized schemes. They were enormous. Enron had 800 megawatts in a Fat Boy; 800 megawatts parked in a hidden part of the California ISO rules on May 22nd, 2000.

CHAIRMAN DUNN: Mr. McCullough, if I can interrupt.

For us lay folks, can you give us what 800

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megawatts means? What impact is that?

MR. McCULLOUGH: Eight hundred megawatts is the equivalent of a nuclear plant. It's approximately only 2 percent of the state's resources. It is a huge --

SENATOR KARNETTE: You said 2 percent?

MR. McCULLOUGH: Two percent.

It's a huge commitment of resources that normally would serve a medium-sized city of 500,000 people.

Fat Boy, which was the first scheme described in Yoder-Hall, what they called "The Big Picture," was a method where you overscheduled those resources to an imaginary load. The ISO would accept the schedule, but it couldn't know that there was real power out there that it could have been using for reserves. In a sense, it was a way to park the power out of sight. If your timing was good, and you could park it, and an emergency occurred, you stood to make five or ten times your investment.

We were surprised going through the numbers that Fat Boy was so huge. Just in passing, going through the affidavits that FERC has received, it's clear to us that as much as 10 percent of California's entire energy supply on May 22nd, 2000 had been parked in Fat Boy arrangements. It is not a small scheme. This is years of planning construction.

So, we were amazed at just how large Enron's ambitions lie in this. Nor do we think they were unique.

In Silver Peak, of course, it was 3,000 megawatts that were used to destabilize the ISO operations on that day.

Looking through Enron's materials, we see a

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strategic approach. This is not a series of small schemes. This was a plan where all the pieces fit together. That strategic approach, we suspect, involved taking advantage of errors in rules, in various market mechanisms, to a situation where the ISO could no longer count on sufficient reserves to avoid an emergency.

As we know, once an emergency is declared, the potential for profit was enormous.

The real question in all of this is, where did the resources go? We now have years of evidence from the WSCC that we never actually ran out of physical resources. That was exactly President Lynch's point in the previous presentation.

It's important to understand, the California ISO did not count physical resources. They counted offers. The reserves they used to avoid an emergency had to be reserves offered to them. Until FERC adopted the must-offer rule, it was rules and regulations showing up in forecasts that led to a California emergency declaration. In a sense, we had a system that was made for a complex and arcane set of schemes to lead to an emergency declaration.

In addition to the resources that we've identified as under-utilized before, we know that emergency dispatch of divested resources averaged only 50 to 60 percent of capacity. We know resources were exported from the state and then returned in hourly markets, ricochets. We know resources were parked out of sight. Overall, we know that the ISO declared emergencies while overall reserve margins ranged from 13.4 percent to 25.7 percent in the WSCC.

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To put that in context, five years ago we were having arguments in front of the PUC about whether reserves of 12 to 20 percent would be allowed. Those were reserves. We were afraid the people were goldplating the system.

During this emergency, we were declaring emergencies during the crisis. We were declaring emergencies when the reserve margins were actually higher than the reserve margins we used to discuss in front of regulatory boards as being prudent.

So, the real question we have in front of us is, how did we go from surplus to deficit on paper? I think we're seeing from some of Mr. Belden's materials and other Enron material an explanation of that.

I've talked a little bit about Silver Peak

before, but luckily, the Committee has come up with significant new Silver Peak materials. I think it's useful to see how the proof of concept operated.

A short description of Silver Peak is, the 2,900 megawatts were scheduled across a 15-megawatt line. 2,900 megawatts is more than enough to serve the entire metropolitan area we're in now. A 15-megawatt line is the equivalent of the substation outside your neighborhood when you go home. Clearly, there's no physical possibility to this. If one could achieve it physically, one would simply leave a line of molten rubble along the path of the transmission line.

Of course, we know that Enron did not expect to do such a thing. What they did expect to do was to destabilize the PX and ISO markets on that day, and then to make a profit

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from the results of the schedule.

It's important to understand that they were actually looking at the big picture, not the little picture. The little picture was that they got some congestion fees. The big picture we'll go through in one second.

When they filed the 2900 megawatts, they did it on a day-ahead basis. They knew that the California ISO would know that they had done it. We now have Mr. Belden's responses to the PX, and here is the actual transcript of what he said. Belden is saying, in such a case Belden needed to ask himself, what would happen if a participant exploited this opportunity? If he did not know the answer, Belden needed to investigate. Belden decided to submit a bid to overschedule at Silver Peak to see what would happen.

This was not limited to simply a congestion fee. This was an attempt to run the entire machinery of the state to see what would happen.

He also said, by the way, he chose that date because he figured it would not be a major crisis. I find that very interesting timing, because of course a year later, an almost identical date brings us to our first Stage II emergency.

This, by the way, is the transcript of the ISO call to Mr. Belden. It's interesting. Number one, Mr. Belden was --

CHAIRMAN DUNN: I need you to stay into the mike so that everybody can hear.

MR. McCULLOUGH: Yes, Mr. Chairman.

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Several things. Number one, Mr. Belden was waiting for the call. When the ISO called, it was immediately sent on over to him.

The ISO is speechless. Karen from the ISO is saying:

"'Cause, I mean, it's -- it's -- it's a -- I mean --"

Tim says,

"It's probably --"

Karen,

"It's a pretty interesting schedule."

Tim says,

"... it makes the eyes pop, doesn't it?"

I think there was a small understatement.

What it really did was, it left the ISO with a 2,885 megawatt resource shortage. Bear in mind, there was no shortage of resources. All this one schedule did was create a virtual shortage of resources.

CHAIRMAN DUNN: Again let me interrupt. Explain

that in lay terms, Mr. McCullough, if you can. Why did it create the virtual shortage?
MR. McCULLOUGH: The computer programs that run the state were suddenly 2,885 megawatts short.
CHAIRMAN DUNN: And that's because of the 2900 versus 15.
MR. McCULLOUGH: Right. The ISO had counted on the 2900 megawatts in order to serve the people of California.

Once it turned out that 2,885 megawatts were fraudulent, they could never have been delivered, then the state had to make adjustments.
These are the adjustments as identified by the Independent System Operator. They needed to make a 2,897 megawatt adjustment. They increased imports from other areas by a thousand megawatts.
Now, bear in mind, we're talking about real imports here, real results came out of this.
CHAIRMAN DUNN: Not virtual.
MR. McCULLOUGH: Not virtual.
They increased plant generation in the area by 182 and load, quote, "decreased," unquote, by 1,676.
Now, decrease in this is a very strange phrase. The Power Exchange had done their initial balancing of demand and supply. With this perturbation, with this event, the Power Exchange had to go back and recalculate. They did that everyday in terms of getting a final balance.
When they recalculated, the mathematics involved the utilities taking 1,676 megawatts less because the mathematics of the utility bids was that they would pay only up to the level they would expect to have paid if the ISO had handled the load. So at this point, the adjustment has turned into increased imports, increased production, and the ISO facing a 1,676 megawatt shortfall.
So, what the PX has handed the ISO is now 1,676 megawatts out of balance.
Now, the real question is, why did the ISO not

declare an emergency.
CHAIRMAN DUNN: Before you do that, Mr. McCullough, I just want to insert here.
You made mention about increased production, et cetera, to resolve the virtual problem that you've identified.
Is it fair to also say that move by Enron also resulted in higher prices as well?
MR. McCULLOUGH: Exactly. There's some disagreement about the level of higher prices. The PX indicated they went up 71 percent. The ISO argues they went up something more on the order of 60 percent. But this was the major pricing incident in the state on that day.
Now, we've had testimony from Enron on numerous occasions stating that they didn't make any money on this. One of the documents that the Committee has found and that we have reviewed is the financial reserves for Enron for each contingency. This chart -- which is difficult to read at that resolution, my apologies -- shows the financial reserves taken for this Silver Peak incident.
Now, you take financial reserves when you believe that you have profits that may not be supportable. So, as an accounting measure, you reserve against those profits.
The reserve for Silver Peak was $10 million. This one schedule, therefore, left Enron perceiving that it had a potential liability of repaying $10 million. It's a somewhat larger number than the number they had given to the PX, which

was they had not made any money at all.
The key is not that they made $10 million from
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the adjustment fees alone. The key is that by putting the ISO into these extreme circumstances, they probably made money from reserves they had sold the ISO for emergency sales, from a variety of other mechanisms.
What we get out of Silver Peak is that it's part of a coordinated strategy, not a single mechanical effort.
What we also get is that it was enormously valuable.
Ten million dollars, by the way, for one day's maneuverings is a very good rate of return.
SENATOR KARNETTE: Anything so complicated as this, it sounds like a science fiction movie, actually. But somebody has to calculate somewhere the moves that are necessary. It's a board game. They're having to take direction from someone; are they not?
MR. McCULLOUGH: Yes, ma'am. As we go through the Enron materials, we're finding again and again that the management at Enron is instructing its staff to write these things down.
At one point, by the way, Tim Belden sends an e-mail to his staff saying, "Call off further Get Shorties. Number one, you're making mistakes. Number two, we don't want it out there in case the California AG finds out."
But most of all, he ends the memo by saying, "I don't want to see any more Get Shorties until it's written down in a set of instructions so that anyone who does not understand the intricacies of the California ISO can make it work."
So what we had was a staff of very bright people,
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very dedicated people, enormously --
SENATOR KARNETTE: About how many do you think?
MR. McCULLOUGH: He had a trading staff of, I believe, a hundred. I don't have that number in front of me. But the actual theoretical work appeared to have been done by a small staff, and it appears that Mr. Belden was the leader of that effort.
When I appeared before, we had just come up with some of those instructions. As it turns out, we're now finding those instructions for a variety of these schemes.
Let me turn to the first day of the crisis. The first day, it was first of 125 days of emergency declarations over 13 months. It was an amazing event.
We had a forecast of 39.1 percent reserve margin for May. In other words, emergencies do not happen in May. That's because loads are generally lower in May, and the spring runoff from the Columbia River provides a vast amount of energy.
The actual reserve margin for May 2000, after all outages, and after all higher loads, after every explanation put forward by the generators and Enron, was 14.2 percent. That would normally be regarded as a fine reserve margin even before you considered outages and load excursions.
For all of that, we had a Stage II emergency on May 22nd, 2000. Moreover, prices on May 22, 2000 went up into the hundreds, and some prices paid went all the way to the cap, $750 per megawatt hour. Without the Stage II emergency, the prices would have been $40 to $50.
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The rate of return for the emergency, so to speak, is 15 to 1. If you had bought power at the forecasted price, then sold it at the high of the emergency prices, you

would have made an enormous 1,500 percent on your investment in one day.

The problem was available bids. Now, this very colorful chart was the ISO's picture of what happened on May 22nd. The art work is far better than ours. Basically what it says is that it perceived a shortage of 7,400 megawatts by the middle of May 22nd. It perceived that shortage because there were outages, it lacked bids, it lacked imports, and it was not certain of where the scheduled load from the Power Exchange.

Now, all of those were problems pertaining to their methodology. As I said, if a utility had been running the system on that date, we would not have had an emergency. We had more than sufficient physical equipment to meet all loads, and 14 percent left over.

What we did not have was bids going into the ISO. We did not have dependable schedules going into the ISO. The ISO could not count on the information they were receiving. It was prudent for the ISO to call a Stage I and Stage II emergency given that they could not count on that information.

Now, until recently, we have not actually known where the power went.

We do know that Enron had prepared for this. Enron had gone long over this summer. Enron had no scarcity in their forecasts. Tim Belden, Enron's VP of Trading, had made a

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variety of interesting statements in the days before the crisis occurred. This e-mail, for example, is to Greg Piper, a colleague of Tim Belden's in Houston. Obviously, you can interpret these words either way you want, but I think the natural interpretation is the easiest:

"We long. Pricing keep going up.
So far so good."

This is on May 12th, 2000.

Now, when we saw this, we immediately went through the materials we had on Enron's own forecasts of what was going to happen in the summer of 2000. Is he simply summarizing analytics that they've done, showing the summer of 2000 as it's going to be the greatest energy crisis in U.S. history?

The answer is no, they had made no such forecast. In fact, their forecast was entirely different. They showed on peak prices going up into the 60s to 70s over that period. That was high but not amazing. If that occurred, we would have been unhappy, but there would not have been blackouts. He showed no crisis for the winter of 2000-2001, when we had real blackouts. In other words, Enron had showed none of these fundamentals.

Now, this, by the way, is in complete contradiction to his so public statements after the crisis had occurred.

This chart and the report that went with it, by the way, is to Mr. Lavorata, who was the head of Enron Americas. So if in fact Mr. Belden was being misleading, he was being misleading to his own boss. So, it's very hard for me to

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believe that he did not believe the documents he was sending to his own boss.

At our office there's been a lot of argument on this particular presentation slide he made to other Enron staff. At the bottom it says, "West power is a solvable problem." The cynics in our office indicate it was solved, west power collapsed, so to speak. That was the solution being sought.

Certainly a more innocent interpretation is that they understood the western power system so well that they had

solved all of its complexities. If so, it turns out Mr. Belden was wrong, because his own forecast did not forecast the crisis that California and the west coast lived through.

Almost all of Mr. Belden's e-mails disappeared on the day of the crisis. We presume that some of them were simply removed.

But we were very interested that on the day after the crisis, he sent the following e-mail to the head of the California ISO, the Chief Operating Officer of the California ISO and an ISO senior staffer. What he does is, he explains not only what he has done in the crisis, but he complains that Enron was not paid enough. No one can say that Mr. Belden did not have an aggressive interpretation of Enron's interests.

The first thing he says here is that,

> "Yesterday we had [scheduled] nearly 800 MW of uninstructed generation in the state (in the form of over-scheduled load)."

We don't yet have detailed data on this, but we

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assume this was the agreement that Enron had to serve the University of California.

Now clearly, we would all remember if thousands of students had been electrocuted that day, as ten times the requirements had been fed into the dorms. Clearly, this is not what they intended.

By over-scheduling 800 megawatts, what they effectively did was, they made sure that 800 megawatts would be bought by the ISO, but they scheduled it into the ISO in a way that the ISO would not use it as reserves.

We know that this was not the only major market player to take this scheme. This is called Fat Boy, though in my office, we're now taking to calling it Sumo Boy, since it's a person who is both very large and very powerful.

This is enough power in and of itself to have moved the ISO back from a Stage II emergency to a Stage I emergency. This is a lot of power.

Now, why would he have put it in an uninstructed generation? Uninstructed generations are not nearly as attractive as a power sale. In an uninstructed generation, you only find out what you'll make after the day is over. This is called the ex-post market. It's the market after the market.

So, Enron has chosen to take a vast amount of power, move it out of the normal marketing channels, and put it in this very unusual channel. Under ISO rules, this is not an acceptable strategy. It poses cost to the ISO, and it certainly poses costs to the system.

We attempted to submit real schedules with real

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information so that we know how to run the system efficiently. This was not a real schedule. It was not real information. It would have led the ISO into making incorrect decisions.

Number two, he complains that this would have hurt in-state generators. That's a very curious position for Enron to take, because Enron was not an in-state generator. Obviously, one does not normally complain that one's competitors would not have made as much money as possible.

He also notes that they've made $750 a megawatt selling power on an emergency basis as well.

Overall, his complaint is that his uninstructed generation only gained -- only received $380, $300, and $119 at different hours, instead of the $750 that he felt they should have received.

This is a pretty aggressive memo. It's certainly

a memo one would have been embarrassed to have sent. But it's also a memo that speaks to an enormous amount of ability to forecast events. Enron has taken an enormous chance.

In the ex-post market, by the way, if there had not been an emergency, it's quite possible they would have received zero for the entire block of power if it had been unneeded.

So, the situation that they were in was that they were able to look forward into the first emergency and be perfectly positioned to take advantage of it with the same power that, perhaps, could have avoided the entire emergency if it had been bid into the normal ISO markets.

The last part of it that I find interesting is

that Tim Belden anticipates the speeches he makes two months later. He talks about scarcity and several years of crisis. This is an amazing prescient comment, considering that this is the first day of the crisis. The ISO has explained that part of it might have been computer communication problems; it's a unique event. Yet Tim Belden already knows that this is a scarcity with perhaps years in front of us.

Just to give you a sense of how important Fat Boy is, this is the first page of the famous Yoder-Hall memo. And the big picture, inc-ing load into the real time market, is what Enron refers to as Fat Boy.

Now, we had wondered at the time why something that seemed so tactical would be the top of all the schemes. We had always thought that Death Star and other schemes seemed to be more important.

But now that we're finding the sheer scale of the energy attached to this, it's not surprising that this was number one.

As I said, we are proposing that we rename this Sumo Boy in Mr. Belden's honor simply because it represents the sheer implacable strength of the stratagem. I'm not sure I want to go into same business of competing for catchy names with Enron, however.

But the bottom line is that our preliminary review of the PAO2-2000 affidavits, the FERC affidavits, indicates that these schemes might have been as high as 10 percent of total needs on this day. That's an enormous amount of power to be investing in a chancy scheme that might have had

no return at all. This was a huge gamble for these market participants.

Let me go into January 17th, 2001. Now, the first is, I have an apology to you. We had requested, or rather the Committee had requested ISO data pertaining to January, immediately after the last time I had the honor to appear before you. We received a preliminary response approximately two months later. We've had enormous difficulties understanding that response. We've made numerous requests to the ISO for clarification; we've had phone calls with the ISO; we've exchanged e-mails. Your staff has been very, very effective in trying to bring this to resolution.

We are perfectly willing to believe that after only 25 years of experience that we're unable to understand what a schedule is. However, it is useful for the parties to work together. And so, we received some additional data requests late yesterday. We've not had a chance to look at them, and we are going to, in fact, review those.

What you'll see here is that the events on January 17th, 2001 were so chaotic that it would appear that even the simplest power dispatcher could have made better

choices. It is not clear to us that that's the ISO's fault. In fact, our operating hypothesis is that the presence of these schemes made ISO operations virtually impossible on that date.
But what we have done here is go through the preliminary materials we received from the ISO and note that they tell a very unusual story. They tell a story that seems to be at odds with the official flow data that comes from outside
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the ISO.
Again, I have no doubt that we'll learn more, and there'll be clarification. We welcome it. I'm happy to learn from ISO staff, and I'm looking forward to an opportunity to talk to them further.
CPUC staff earlier today noted that there are two paths to Northern California. The logical, the more efficient path, is Path 15. But there's a directly parallel path up the DC intertie from L.A. to Oregon, and then down from Oregon to Northern California. If the Path 15 is congested, it is logical that schedules should move from Path 15 to the intertie. If in fact both lines are congested, which is what we would need to have happened for there to have been blackouts in Northern California, we would have expected to see congestion showing up on the ISO congestion management data on both lines. We did not see that.
By the way, this more complicated chart is how the ISO sees the world. And just in passing, the long green line represents the DC that comes up from Silmar all the way to Oregon. We've put a couple of little green dashes so it's understood that it's standard operating arrangement to cycle power through Oregon back to California if needed.
These are congestion management results, which will require the world's best eyesight to see on the screen, my apologies. What they show is that we had congestion on Path 15 on both the initial day-ahead schedule, the final day-ahead schedule, and through most hours in the hourly schedules.
All of those would normally indicate that
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schedules be moved --
CHAIRMAN DUNN: Let me interrupt, Mr. McCullough. I believe it's on Page 12 of your report.
MR. McCULLOUGH: Very good.
CHAIRMAN DUNN: So we don't have to have the world's best eyesight.
MR. McCULLOUGH: And paper still has a few advantages over plasma screens, more pixels.
What it indicates is that it was difficult to ship power to Northern California over Path 15. Now, we don't know yet whether that was an actual constraint or whether there was phantom congestion. That's one of numerous issues we're seeking clarification from ISO staff.
We do know that logically schedules that could not make it through Path 15 should have been rescheduled to NOB. We see no congestion in NOB.
We do see congestion in Northern California and Oregon, but amazingly, it's congestion for power leaving California, going on to Oregon. So, if a schedule had been shifted to NOB, gone up the DC and then back down the AC, it would have reduced congestion. It would have improved the transmission system.
All of this indicates that we seem to have a common sense contradiction. Any market participant should have looked at this and said, "I could get congestion payments by going around this cycle and back into Northern California."
Now, the materials we have indicate that there

were really not a lot of constraints on NOB in that period, but
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that bothers us because both the DC line and AC line are actually Bonneville Power Administration lines, and those are scheduled and administered by BPA Standards. BPA is not as forgiving as the California ISO. They expect hourly schedules. They expect to see the schedules match the flows unless there's an emergency.

When we take a look at the line in Northern California, the AC line, we discover that the actual flows as reported by BPA indicate strong imports into California. However, the schedules we've received from the ISO, and also the schedules we've taken off the ISO Oasis, appear to show that California was exporting power to Oregon during the crisis of January 17th, 2001. We find that surprising.

Now at this point, we've asked the ISO staff more than once for some clarification. As I said, we're seeking further clarification.

Clearly, two things could occur. One, we could be having the Yoder-Hall scheme show up and obscuring the actual data the ISO was receiving, so that the results did not match the ISO's schedules. That's been our operating hypothesis.

Number two, the ISO could have been making so many emergency repairs to their schedules that the entire direction of flows would turn out to be misstated. Again, we've requested all schedules and all information so that we're able to understand the difference.

But the critical issue is the data we have from the ISO appears to be in the red. It's going in the wrong direction and on the other side of the actual flows as metered,
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by the way, by both the ISO and the Bonneville Power Administration.

That worried us enough that we went and ran the same numbers for the entire period. And from September all the way through May, we find that the Bonneville Power Administration actual flows are indicating imports into California, whereas the scheduled data appears to be indicating exports out of California. In fact, this blue line would show exports through much of the winter, through much of the crisis.

Now, we know that the Secretary of Energy provided emergency orders over this period. We know that Governor Davis provided emergency orders. We know that there were extreme interruptions. We were very surprised to find that the schedules, again, appeared to indicate exports.

What's the conclusion we take from this? One possible conclusion is that the ISO made extreme operating errors. These errors are large enough that I find that simply unimaginable.

The other is that we're having a series of data problems that are so great that they bring all of the congestion management mechanisms and all of the reporting into real doubt.

Now, I think that's very important considering that we're now facing a moment to extend this same type of methodology outside of California to broader areas.

This was one of the worst days in U.S. energy history. We turned out the lights to sizeable portions of the State of California. The prices were enormous. And yet, 18
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months later, we're still uncertain which way the power was flowing over the largest transmission project in the world. This is not a good sign.

As a next step, I'm very much hoping that the

ISO will educate us so that we're going to be able return to you and explain whether or not California was exporting power in the midst of one of the worst days in its entire history. I suspect, given that the actual flows indicated imports, that it was not.

But I'm concerned about the parties that filed those schedules, and how those schedules do not seem to match the flows. I'm concerned that that is part of a generic set of schemes that speak manipulation rather than normal operations. I think it's very important to get to the bottom of it.

I have just one more comment. A central part of all of this is transparency. Now, I know enough people have repeated that, that it should now be agreed by all parties, but it's not. Data availability from the ISO is still very, very difficult. Data availability from other parties is still good, but the efforts are ongoing to restrict normal operating data from other parties.

In the course of our investigations, we discovered that the WSCC staff had been instructed not to release ISO reliability data even to other WSCC members.

Now, logic of this is to avoid anti-competitive activity, but it's very hard to understand how historical reliability data, the balance of loads and resources for the year 2000 or 2001, would have anything to do with our future.

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We know the rules have changed; the players have changed; the entire complexion of the industry has changed.

So, if you'll bear with me for one small plea, which is to keep your eye on that ball. The only way for us to assure efficient commodity markets is for us to understand the commodity markets. Commodity markets without information are both in efficient and easily the subject of manipulation.

There's nothing in electricity that makes it different from any other commodity market. And yet, the proponents of secrecy -- among them, by the way, the same parties that we worry about here -- have been tireless in their attempt to classify all of this data.

Thank you very much.

CHAIRMAN DUNN: Okay. Thank you, Mr. McCullough. Let's open it up to questions. Senator Karnette.

SENATOR KARNETTE: Maybe I'm just too sensible or something. It seems to me like it doesn't matter how much we know about the commodities. If we don't have the right people making the decisions, what's the difference? You can know. You know a lot, obviously. You've determined a great deal.

But it's a philosophy we're looking at, it seems to me. And I don't know if that means leadership, and that means who's running the show. I don't know what we do about that.

That's Senator Dunn's problem, I guess.

MR. McCULLOUGH: Luckily, I'm just economist. I only have to count things.

It's your job to actually make policy.

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SENATOR KARNETTE: We can listen to this, and I do understand in concept. I understand what you're saying.

But if people are making decisions, obviously they're making decisions based on information. But those decisions are determined by many other factors. And how those decisions are made, and the philosophy those decisions are based on is really what we have to look at.

MR. McCULLOUGH: Yes, ma'am. I agree.

CHAIRMAN DUNN: If I may, Mr. McCullough, I want to state in lay terms, if I may, the macro view of both your

testimony and the testimony of President Lynch.
The PUC presented their report which, as we know, showed how, based on their studies, that a certain amount of power that could have been available to California was not made available. In essence, it was taken off the table and may have been a contributing cause, if not the cause, of some of the blackouts on days where we saw service interrupted.
Enron, of course, who does not have any in-state generation capabilities, couldn't take generation capacity off the table, so to speak, as a Duke or a Dynegy or a Mirant could do.
Is it fair to say that in essence what you shared with us today is that Enron had its own way of contributing to blackouts and days in which service were interrupted by parking the power that it owned under a variety of schemes, making it look like it was unavailable?
MR. McCULLOUGH: Yes, sir.
CHAIRMAN DUNN: I want pose the same question,

Mr. McCullough, that I did to President Lynch, which is, have you drawn any conclusion at this point in time as to whether in fact the ISO should have been aware of the Enron schemes at the time they were occurring, and whether there were steps the ISO could have taken to eliminate the contribution of Enron to the blackouts and days in which service was interrupted?
MR. McCULLOUGH: Yes. In my presentation today, I focused on Fat Boy, and then I've also focused on Wheel Out.
In Terry Winter's presentation to Congress in June, I believe, he identified rules and changes in both of these areas. Those were good rules, and those were good changes.
It's not clear to me how intensely those were enforced at the start of the crisis. I believe that if we had responded -- and I'm using the word "we" -- if we had responded more energetically at Silver Peak, we might never have seen May 22nd, 2000. Silver Peak ended up with a slap on the wrist, a $25,000 settlement. I think that was a signal not only to Enron but to other players that they could face only an ineffective administrative review.
Part it also was, and we have this also in materials that your staff made available last week to us, a discussion within the ISO about whether they should discuss these malefactors publicly. The philosophy that kept it quiet was in fact a bad philosophy. There should have been a billboard indicating these issues.
Certainly on May 22nd, 2000, when my firm was retained by major utilities and industries in the northwest to

find out what was going on, we certainly would have been amazed that Enron had simply parked 800 megawatts in a nonexistent load. And it's taken us two years to get to that detailed understanding of the problem.
CHAIRMAN DUNN: Senator Morrow.
SENATOR MORROW: Thank you, Mr. McCullough, for your testimony here today.
I've got a question. I'm trying to understand it.
In your report, you indicate in effect that you mainly have two main huge lines, if you will, up to the Oregon border: One by way of California-Oregon; one by way of Nevada-Oregon border. Apparently, one was, all indications were at least to the ISO and others, that it was congestion at Path 15, when all along during, I guess, January 17th, at least, of 2001, the other, the Nevada-Oregon border was completely unused

capacity, completely open.
Am I right so far?
MR. McCULLOUGH: It was open every hour. It was not unused. But it had hundreds of megawatts of available capacity, yes.
SENATOR MORROW: And of course the question I guess is, why it was not used.
I think somewhere in your report I read, and I may be oversimplifying, that route, if you will, should have been obvious to any trader. Again, I may be being too generous here.
If that is the case, would it have been equally,

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or should it have been equally as obvious to the ISO?
MR. McCULLOUGH: Clearly the ISO understood the route. We know that they contacted extra regional parties to facilitate transactions over that route.
We don't know why the ISO did not use every megawatt hour of that route. There was substantial ability to move additional power to Northern California. We know that from the actual flows. We can see how much was on the line, how much was left.
At the time, this was a highly stressed period for the ISO. It's conceivable that in the context of their problems, optimizing down to the last few hundred megawatts might simply have been impossible.
But practically, if we had had the traditional utility management, if we had still had the Southern Cal Edison and Pacific Gas and Electric in charge of those lines, they would have been run to every last kilowatt hour.
When we are in a Stage III emergency, one does not stop to worry about contract terms. If a contract determines the way you call, you get that cleared on a direct basis. There should have been no reason why those were not fully utilized. They were fully utilized at different dates. On this particular date, it was simply the ability to move a fairly large block of power to the north apparently was not undertaken.
SENATOR MORROW: On this particular date, obviously you studied this particular date, was this a unique or an unusual circumstance that you had the one line that was open

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and available for capacity, compared to the other dates where we had the blackouts?
MR. McCULLOUGH: No. The reason why I made the point of this particular date is, every day is a little different, but the conditions I'm describing apply to other blackout dates as well.
SENATOR MORROW: Thank you.
SENATOR KARNETTE: You mentioned about the projections of no emergencies. And there was a gamble; they were making a gamble. I guess this was Enron you were speaking of.
MR. McCULLOUGH: Correct.
SENATOR KARNETTE: And you said it was a real gamble based on their own projections.
Did that mean they had to create an emergency?
MR. McCULLOUGH: I believe so. I believe that what we see in Silver Peak is a proof of concept.
When Tim Belden said, "Well, I wanted to do it and see what would happen," he could have done that with a 25 megawatt schedule over a 15 megawatt line. That would have proved what happens when you try to schedule more power over a smaller line.

He didn't do that. He chose to put 2,900 megawatts through that.
The proof of concept was whether filing fraudulent schedules could de-stabilize the ISO. He took enormous risks by doing this. For all he knew, the first thing that the ISO representative who called him would have done,

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would have been to have called the California AG and asked for an assistant AG to issue a warrant for his arrest. Some of us would have regarded that as simple commercial fraud.
Why he did it was because he was looking for information on what happened when you stressed the system, when you pushed it off its balance. He sensed something we did not. Proves how intelligent this individual is. Unfortunately, it makes him scarier.
CHAIRMAN DUNN: May I interrupt.
I want to keep you going there, Mr. McCullough.
Is it fair to say that scheduling 20 megawatts over a 15 megawatt line would have not necessarily put it off balance?
MR. McCULLOUGH: Absolutely not.
CHAIRMAN DUNN: Thank you. Continue.
MR. McCULLOUGH: So, he chose a number so large that it would push it away from stability. And in doing that, he had a very good idea of how the ISO would respond to this massive disequilibrium, this massive surprise.
When we go into May 22nd, 2000, he's taking 800 megawatts.
This, by the way, is a career-changing decision for most of us. We're talking about millions and millions and millions of dollars. He's going to put 800 megawatts in a market where he is not guaranteed to make a penny. He might have had to have called Mr. Lavorata at the end of the day and said, "You know, I just sold 800 megawatts for a full day to the California ISO for zero dollars."

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Now the odds, as it turned out, were small. Did he have an option? Absolutely he had an option. There was 800 megawatts. He could have bid those 800 megawatts into the PX for a normal price. He could have bid those 800 megawatts into one of the ISO markets for a normal price. He could have sold them to any other party.
But he chose to take this very unusual step. And given what we know about the sheer amount of preparation and thought that went into these issues, the other materials we've reviewed, it's clear that he had a pretty good idea of what was going to happen.
And when he did not get his $750, he did not respond by saying, "You know, I took a big gamble. I could have made 50, and here I make 300 and 200." He immediately shoots an e-mail off to the head of the ISO saying, "You didn't pay me enough. I should have been gotten $750 for every last one of these."
To call this aggressive is an understatement. But it also seems to imply a level of prescience that I find amazing.
Remember, this is May. This is a day in which we do not have emergencies.
Even the ISO, when it responded in that colorful chart, is talking about special conditions, problems with computer communications. They viewed it as a surprising event.
And here is Mr. Belden able to think ahead so well that he's perfectly positioned to move this energy into the market, get top dollar for it, and at the same time, avoid the

recognition of the surplus that was available to the ISO at that moment.

CHAIRMAN DUNN: Mr. McCullough, can you speculate, if you would please, if you can, as to why you think Mr. Belden would have thought the Silver Peak incident was, albeit carried a risk to Enron, that the odds were in his favor as to ISO's response?

MR. McCULLOUGH: Clearly, by looking through the e-mails, he had an enormous amount of contacts within the ISO. We were surprised that at some points he receives confidential and secret materials. Now, I can't speculate why they were marked confidential and secret, but if you had an ISO document marked "Confidential and Secret," one would expect you would not send it off to one of the market participants. I'm not sure who else it would be confidential and secret from.

We know that there was an Enron party on the board, Enron representative on the Board of the ISO at the time. Clearly, he felt that he could manage this problem, and equally clearly he did.

Richard Sanders did what could only be called a brilliant legal job in arguing the PX down to a $25,000 settlement.

But it was a risk. It was an amazing risk. If all this was was a test, 2,900 megawatts is so outrageous that, again, this could have been a career ending episode.

We know in similar periods, I visited several traders who undertook far smaller manipulations, were caught by the CFTC, and were thrown out of the trading business for years,

and forced to pay very large fines.

CHAIRMAN DUNN: Referring to the Commodities Futures Trading Commission.

MR. McCULLOUGH: Right.

Mr. Belden's experiment at Silver Peak dwarfed anything they had ever contemplated.

CHAIRMAN DUNN: A couple other questions, and I think Mr. Drivon has a few as well.

First, do you have a copy of President Lynch's presentation she made before you?

MR. McCULLOUGH: I don't have it up here.

CHAIRMAN DUNN: Alex, could we get one to him.

Turn to Page Six. For a refresher, this is her chart on the 65 percent of Northern California blackout hours could have been avoided if generators had produced all available power. This is Northern California now.

See the chart?

MR. McCULLOUGH: Yes, sir.

CHAIRMAN DUNN: Again, I want to zero in as I did with President Lynch on the first quarter, so to speak, of that graph in which the red lines far exceed the blue lines. That's the 35 percent difference from the 65 percent.

MR. McCULLOUGH: Correct.

CHAIRMAN DUNN: Is it possible that the various schemes you've discussed today by traders, not generators, but by traders in which they created a situation where available energy was parked at certain locations, or created an impression of congestion, that that could explain in whole or in part why

the red lines on Page Six in that first quarter exceed the blue lines?

MR. McCULLOUGH: Absolutely.

CHAIRMAN DUNN: I don't mean to drag you into this but for our lay people, including myself, can you explain

that a little bit?
MR. McCULLOUGH: We discussed on January 17th, which was one of the dates President Lynch has in her chart, that it was clear that the schedules we're seeing aren't optimal. We have schedules attempting to force their way through Path 15, when an alternative, uncongested path exists.
We don't yet understand why they would do that. I can give you some my hypotheses why they might. They might, in fact, have been part of a scheme like Death Star to create congestion fees for FTR owners, or simply one of the other subsets of schemes.
In any case, it's logical to believe that in a perfect world, we would have carried 100-200 megawatts up the DC and back down the AC during those hours. That would have gone a long way to fixing President Lynch's 65 percent.
CHAIRMAN DUNN: Again, trying to put a lay description here.
In other words, for first quarter of that graph, the blue line actually may be substantially higher, but is not simply because there was a perception of unavailable power?
MR. McCULLOUGH: Correct.
CHAIRMAN DUNN: Okay. I know I posed this question to President Lynch; I'll pose it to you,

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Mr. McCullough.
Other than that, there doesn't seem to be any readily apparent explanation to the difference between the first quarter of that graph and the three remaining quarters. There's no significant weather change from first quarter of the graph to the second quarter; doesn't seem to be anything, at least in common experience, that would readily explain it.
MR. McCULLOUGH: No. The January comparison to March is quite good. When we get all the way over to the right edge, then we're beginning to have some of the plants come back on line.
But we would not have expected to see the overall patterns in the bids and the structure between the two regions to have changed dramatically between January and March.
CHAIRMAN DUNN: One last question, and then I'll turn it over to Mr. Drivon for some questions.
Standard market design, I think it was you or President Lynch had mentioned in their direct comments that at the federal level, they are contemplating, of course, a standard market design based upon California's; correct?
MR. McCULLOUGH: Yes.
CHAIRMAN DUNN: And in fact, there are certain decisions that are potentially going to be made imminently at the federal level on this issue; correct?
MR. McCULLOUGH: Correct.
CHAIRMAN DUNN: Based upon your experience and your review of the data from the California market that you have reviewed thus far, do you believe it would be a reasonable

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approach at the federal level for them to adopt a standard market design based upon California's?
MR. McCULLOUGH: The word imprudent comes to mind.
The problem is not with competitive markets per se. I think all of us generally believe that competition is a good thing.
The problem has to do with checks and balances. The same scholars, such as Professor Hogan, who praised these schemes, praised the new schemes, I have no doubt Professor Hogan's a very bright individual --

CHAIRMAN DUNN: He doesn't like us right now, just so you know.
MR. McCULLOUGH: Actually, I'm told he's not fond of me either.
But the key is that we do not have a track record to make this decision at the moment. I would be happy to be able to state that we have made the following five errors in California, and once corrected, we will not see a recurrence of the problem. I cannot do that. As a prudent individual, I'm unwilling to undertake a new and larger experiment until I understand the old one, especially when the old one led to the virtual collapse of the west coast economy.
So my situation at the moment is this simple. When we are able to describe exactly why these market participants were doing what they were doing, and understand how that tracks to the result, then we're ready to embark on a new experiment.

It would be a rare scientist who would launch into a new experiment when he hasn't even written down the results from the last one, especially when the cost can be so enormous.
CHAIRMAN DUNN: Mr. Drivon.
MR. DRIVON: Thank you, Senator Dunn.
You have been talking about Enron here. A couple things come to my mind. I guess maybe the most colloquial way to say it is, it's difficult for me to believe that Enron did this by themselves. It would be just as difficult to figure out how a turtle could get on a fence post by itself.
We know that Enron became a scheduling coordinator, and we know that they were scheduling power, and they are scheduling load for others.
Is that your understanding?
MR. McCULLOUGH: Yes.
MR. DRIVON: We have learned through this investigation that some of Enron's divisions were developing load in California in the early stages of the market by selling to large -- I don't know whether you call them wholesale or retail users, people like the University, and IBM, and Quaker Oats, and others -- at prices for electricity that were below market and were actually costing Enron net cash dollars out of their pocket; although, they were showing a profit by marking the market over a ten-year period when they couldn't hedge that far out.
But they were developing this load which later was used to allow them to effectuate some of those games that

they developed and played, and that were described by Yoder; right?
MR. McCULLOUGH: Correct.
MR. DRIVON: And we know that they developed those pricing possibilities and covered the economics of them by using completely fabricated and baseless forward price curves. You've been exposed to that information as well, I'm sure.
MR. McCULLOUGH: Correct.
MR. DRIVON: Do you believe -- and I know this is not the subject of your presentation here -- but do you believe that there is substantial circumstantial evidence which points to at least tacit collusion between Enron and some of the other major market players in developing the picture that we've seen from you here today?
MR. McCULLOUGH: Economists aren't good at interpreting motives, but I can, in fact, review the risk.
For Enron to have proceeded unilaterally without

also knowing that the bids would have gone up at the PX, and that we would have had generation that had not been made available during emergencies, would have been very, very risky. In order to have created a sensible gamble, they had to have some very profound understanding of what these other players were doing.

So, I have found it interesting that in Belden's e-mail to Winter, he was explaining the plate of California generators when he wasn't one himself.

MR. DRIVON: And as a matter of fact, had zero generation within the ISO's market area; right?

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MR. McCULLOUGH: Correct.

MR. DRIVON: So, you describe a 15-1 shot that pays off for Enron and, as a matter of fact, perhaps coincidentally, perhaps not, other market players. Do you recall that part of your testimony?

MR. McCULLOUGH: Correct.

MR. DRIVON: And I think that what you're saying is, betting on a 15-1 shot is less of a gamble if you have some way of either fixing the race, or at least directing the progress of the different horses.

MR. McCULLOUGH: Absolutely.

And the other part of it that's so interesting is that we have Enron's internal forecasts and fundamentals. They're not showing this. It's not as if they had a computer model that was so smart that they could tell us that Reliant was going to under-generate on these dates, or Mirant, or one of the other generators.

What we have instead is a very sober, common sense set of forecasts, approximately the same as what other entities were forecasting, and then an entirely different set of market strategies. So either he had a second set forecasts, and he didn't bother to pay attention to the ones developed by the people who worked for him, or he had something else up his sleeve.

MR. DRIVON: Like conversations, contact, agreement with others so that he would have information, direct information, upon which to base his actions?

MR. McCULLOUGH: That's one possibility.

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MR. DRIVON: Can you think of a possibility that is more likely?

MR. McCULLOUGH: No, out of the shoot I can't. We have a situation where the alternative is parallel behavior, where it's so obvious what everyone should be doing that they all do it at the same time.

MR. DRIVON: Which is described as conscious parallelism?

MR. McCULLOUGH: Correct. But in this case, Mr. Belden's strategy, and the strategy of some of the other market participants, is not obvious. If he was counting on other people parking their generation in Fat Boys, this was not something that would become immediately obvious to any player at the time. This was a risky undertaking.

If he had come to me and said, "Well, you of course are going to be parking your entire career's worth of energy on May 22nd at the ISO in a fraudulent load," I wouldn't even have believed him, it was so unlikely.

MR. DRIVON: Let's stop on that point for just a moment.

You used the word fraudulent load, and we know that you've thoroughly investigated, and so has the PUC under President Lynch, thoroughly investigated the application of load

on a few different, very restricted number of days because volume of work involved to do that, and found the load to be fraudulent; correct?
MR. McCULLOUGH: Correct.
MR. DRIVON: And we also know that on certain
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days that have been investigated, that there was congestion which is also fraudulent.
MR. McCULLOUGH: Yes, we've -- these are the various Yoder-Hall schemes, and we have quite a record on those.
MR. DRIVON: And we know that Enron was not the only load scheduling entity that was scheduling similarly improbable load schedules.
MR. McCULLOUGH: Correct.
MR. DRIVON: And we know that Enron was not the only entity that was creating these sorts of impossible congestion situations.
MR. McCULLOUGH: Correct.
MR. DRIVON: And so, their activity is either coincidental, which would fly in the face of statistical probability, or has to be explained by some other explanation; right?
MR. McCULLOUGH: Absolutely.
MR. DRIVON: With respect to how much energy 800 megawatts is, I'm looking at the table on Page Six of President Lynch's presentation. And up the left side is a graph labeled "Megawatts." Do you see that?
MR. McCULLOUGH: Correct.
MR. DRIVON: And there's a line across there. And if you follow that line across there, you find the purple line on her chart would exceed 800 only one time.
MR. McCULLOUGH: Yes.
MR. DRIVON: So, the 800 megawatts was an amount of power which could solve a lot of problems a lot of the time
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if it were actually made available and not a subject of this megawatt hide-and-seek that you've discussed; true?
MR. McCULLOUGH: Absolutely.
MR. DRIVON: One further point. Actually I have two, but this is next one.
If the appearance of the flows that you had up there a while ago were to the effect that power was flowing out of California, you're connected with me on the question so far?
MR. McCULLOUGH: Yes, sir.
MR. DRIVON: That would tend to create at least an apparent crisis if the volumes were high enough; correct?
MR. McCULLOUGH: Absolutely. It would have been very inappropriate considering the Stage III emergency declaration in California.
MR. DRIVON: And that sort of situation results necessarily in higher prices; correct?
MR. McCULLOUGH: In that situation, it might have even resulted in a wholesale blackout when we were under emergency conditions. Stage III emergencies imply that all interruptions will have been made to avoid the export of energy from the area of the emergency.
MR. DRIVON: And what energy is being supplied in California at that point, price is practically not an issue; correct?
MR. McCULLOUGH: That's correct.
MR. DRIVON: It would also point to the apparent need for out-of-market purchases; correct?
MR. McCULLOUGH: Yes.
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MR. DRIVON: If we look at the other side of the equation there on your flow analysis, if there was actual power coming back into California, that would be power coming in from outside the ISO's market area; right?
MR. McCULLOUGH: That's coming from Oregon.
MR. DRIVON: And that would be coming in as out-of-market power; correct?
MR. McCULLOUGH: We believe so, and probably will know so when we finally get the schedules under which it was transmitted.
MR. DRIVON: That'll be the subject of my last point.
If those flows represent out-of-market energy coming back into California outside of the ISO's market area, they would be coming in as out-of-market purchases, and therefore not subject to whatever the price caps might have been at that time; correct?
MR. McCULLOUGH: Correct. This was a Stage III emergency. Those concerns wouldn't have covered.
MR. DRIVON: Sure. So at this point, because it look likes power is going out, we've got power being purchased from within the ISO's control area at very high prices in a frantic attempt to avoid the lights going out, on the one hand; correct?
MR. McCULLOUGH: Right.
MR. DRIVON: And replacement power coming back into California as out-of-market purchases at prices that exceed the even then very high price caps; right?

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MR. McCULLOUGH: We would expect so.
MR. DRIVON: And the bottom line of all of that is, somebody made a whole lot of money, and somebody had to pay a whole lot of money; right?
MR. McCULLOUGH: That's what we think. That's exactly what we're trying to track down in that comparison.
MR. DRIVON: And the bottom line is, they made it and we paid it.
MR. McCULLOUGH: Actually, we aren't sure who "we" is anymore, but someone made it and someone paid it.
MR. DRIVON: Well, I checked my bank. It wasn't me that made it.
MR. McCULLOUGH: I was simply relating to the comment that one of the Senators made, that NRG might have been involved.
MR. DRIVON: NRG, right.
My last point is this. If you have a thought on the point, why is it that we have had so much difficulty in obtaining some of these data, such as schedules and so forth, from not only the market participants, but also from the ISO?
And the second part of the question is, do you have any idea on when that fact is likely to change?
MR. McCULLOUGH: Well, this is a critical issue. This goes to the whole question of transparency.
The ISO has lobbied to adopt very secretive rules, in part by the very parties who took advantage of them. The ISO has continued to respect those rules, at times even beyond what would appear to be the tariff authority to do so.

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I think part of it is simply that there needs to be a philosophic change. Both economy and democracy operate with checks and balances. Without them, we have no idea what the outcome will be. In the case of these schedules, all of this should have been available six months after the fact. That was the original design of the ISO data availability.

Eighteen months later, they're only partially available, or perhaps they're available in such an arcane way that an industry expert can't understand them. In either case, we defeat our goal of checks and balances.

We need to know what's going on here. Somehow, I think the ISO is going to benefit from this as well. They have a world of possible allies and supporters, and yet it's impossible for us to support and protect them in their role unless we actually know what went wrong in this particular period.

MR. DRIVON: So, we spend 18 months trying to figure out what happened on three days in order that we can try to put together some way of fixing that, so what happened on those three days won't happen again without very much potential for being able to get ahead of the curve and stop somebody's economist and trader from figuring out a new way to accomplish the same purpose with a new set of rules, and we need to do it in a situation where we're operating a committee for 18 months on total fewer dollars than somebody withholding 800 megawatts of power might make in a single hour.

Is that fair?

[Laughter.]

SENATOR KARNETTE: Let's hope you're smarter.

MR. McCULLOUGH: Every part of it is.

If the ISO was an auto repair shop, I would change shops. The simple fact of the matter is that the Enron traders who went on to UBS Warberg have not been sitting at their desks idly. They've taken the same acumen and drive, and applied it to standard market design.

And they're not sitting here having a conversation about what happened two years ago. Their conversation is what's going to happen next year.

MR. DRIVON: One further thing on that point. I spoke with a very highly placed executive of another generator trader about six or seven months ago. And that person said -- I asked, "What is to prevent another trader from being another Enron?" And the response I got was, "The integrity of our management staff and board of directors."

CHAIRMAN DUNN: Mr. McCullough, I just have a few follow-up questions. One is a follow-up to questions posed by Mr. Drivon when he was mentioning the conduct that you covered to some degree today after review of the Enron documents.

He asked you if it was a fair assumption that other market participants engaged in the same strategies. And your answer was yes.

Can you identify others that you believe may have engaged in similar strategies here in California?

MR. McCULLOUGH: We can identify a number. Unfortunately, we have some confidentiality issues.

I've cited one trader who also took a large Fat Boy position on May 22nd; however, those materials are in the Committee's hands but they're subject to seal.

What we have is a number of parties in the affidavit stage who have stated that they've over-scheduled. So, we know that that was a wide spread behavior.

Our ability to go through that in detail, and I'm happy to do so, is going to require that we take some preliminary steps to make sure we've respected your confidentiality commitments.

So the answer is yes, I'd like to, but I need your guidance.

CHAIRMAN DUNN: Understood, Mr. McCullough. We

can reserve that for another day.
I want to follow up on a question that Senator Karnette had asked about, the position we, as a Legislature, are in with respect to looking towards the future, and what we do about the various findings, not only this Committee, but all of those who are looking at the California energy market in some fashion or another.
I want to throw one issue out there to seek your commentary.
Prior to the deregulation here in California, those who provided the electricity were under a legal obligation to serve. If the need was there, they were required to serve.
Post deregulation, those who generate the power and own or possess the power do not have that legal obligation to serve.
I realize FERC has tried to take a certain few

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what I consider to be baby steps towards that direction, but do you have an opinion, if this Legislature were to consider reinstituting an obligation to serve on those who generate and provide power in California, what impact that would have on the market in California?
MR. McCULLOUGH: I think it would be very healthy.
The fundamental cause of the emergencies that were declared was not a physical shortage; it was an institutional shortage.
Why did Pacific Gas not declare Stage III emergencies? By the way, they could have as well if they had wanted to in 1994. It's because they had long-term contract commitments and plants in place to provide reserves. It was part of their requirement to serve.
When we eliminated that, we created a very fruitful area of mischief. In fact, in all of my discussions today was how you actually make real life plans go away in order to cause an emergency.
We have no evidence at all that providing reserves through markets has been successful. We know that providing kilowatt hours works reasonably well.
For banks and insurance companies, when it comes to reserves, we mandate those. There is a requirement to serve. It's a directly analogous set of rules.
Why do we adopt those? Because we didn't like going through the Great Depression when all the banks failed at once, so we set some pretty stringent rules that they had to

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follow.
I think the moral of the California situation is that that may, in fact, be the natural answer. I'm a price-theory economist. I like competition; I like markets.
But I also like stable banking. And I'm not likely to complain that the federal government establishes banking reserves rules.
CHAIRMAN DUNN: Other questions from Committee Members?
Seeing none, any closing comments, Senator Morrow, Senator Karnette?
Let me just share a few. As I stated at the outset, the Committee hasn't drawn any final conclusions today.
I will offer my own opinion, not the Committee's but my own, that I find the presentations today disturbing, to say the very least.
Probably picked up in my question to President Lynch, if in fact there was available power that was not made

available during times of blackouts and interrupted service, it seems to show an unhealthy level of callousness toward California, its economy, its citizens, its law enforcement, its health system, its education system, by those who had assured us that they were in it to do right to California.

My hope is that further examination may show that that callousness is not present.

But if we just accept the representations today, it does not bode well for those who have promised something different to Californians.

With that, if there are no further comments, we are adjourned.

[Thereupon this portion of the Senate Select Committee hearing was terminated at approximately. 2:52 P.M.]

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CERTIFICATE OF SHORTHAND REPORTER

I, EVELYN J. MIZAK, a Shorthand Reporter of the State of California, do hereby certify:

That I am a disinterested person herein; that the foregoing transcript of the hearing of the Senate Select Committee to Investigate Price Manipulation on the Wholesale Energy Market was reported verbatim in shorthand by me, Evelyn J. Mizak, and thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said hearing, nor in any way interested in the outcome of said hearing.

IN WITNESS WHEREOF, I have hereunto set my hand this _____ day of _____, 2002.

_____

EVELYN J. MIZAK
Shorthand Reporter